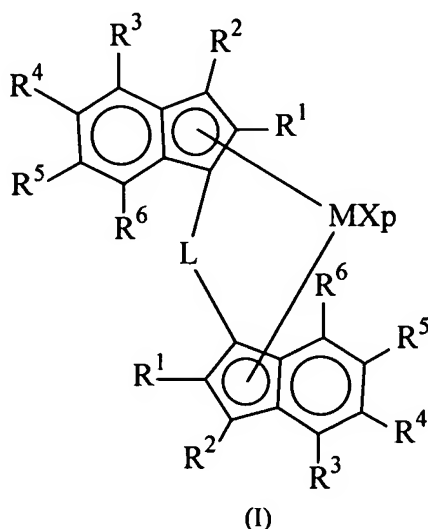


AMENDMENTS TO THE CLAIMS

1. (currently amended) A process for preparing 1-butene polymers optionally containing up to 30% by mol of derived units of ethylene, propylene or an alpha olefin of formula $\text{CH}_2=\text{CHZ}$, wherein Z is a $\text{C}_3\text{-C}_{10}$ alkyl group, comprising polymerizing 1-butene and optionally ethylene, propylene or said alpha olefin, in the presence of a catalyst system obtained by contacting:

a) at least a metallocene compound of formula (I):



wherein:

M is an atom of a transition metal selected from those belonging to group 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements;

p is 2, being equal to the formal oxidation state of the metal M minus 2;

X, equal to or different from each other, are hydrogen atoms, halogen atoms, R, OR, OSO_2CF_3 , OCOR, SR, NR_2 or PR_2 groups, wherein R is a linear or branched, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ alkylaryl or $\text{C}_7\text{-C}_{20}$ arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; or a $\text{OR}'\text{O}$ group wherein R' is a divalent radical selected from $\text{C}_1\text{-C}_{20}$ alkylidene, $\text{C}_6\text{-C}_{40}$ arylidene, $\text{C}_7\text{-C}_{40}$ alkylarylidene or $\text{C}_7\text{-C}_{40}$ arylalkylidene radicals; R^+ , equal to or different from each other, are linear or branched, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ alkylaryl or $\text{C}_7\text{-C}_{20}$ arylalkyl radicals, optionally

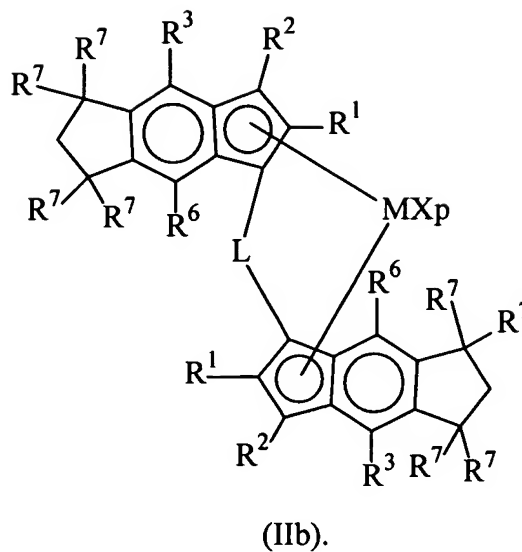
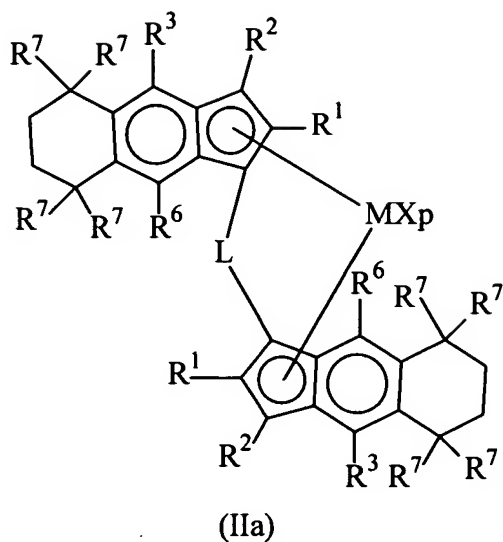
containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

R^2 , R^3 and R^6 , equal to or different from each other, are hydrogen atoms or linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

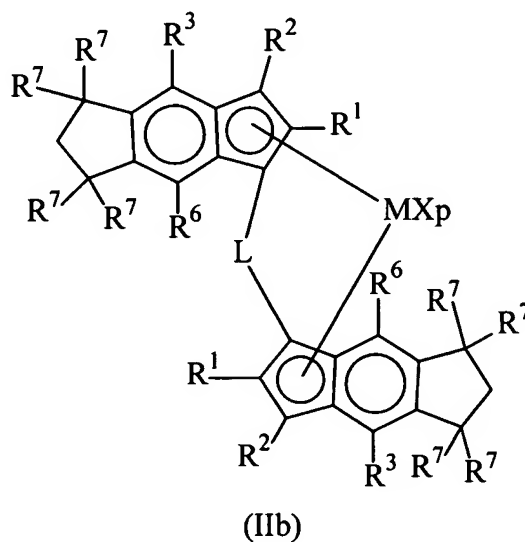
R^4 and R^5 , form together a condensed saturated or unsaturated C_3 - C_7 membered ring optionally containing heteroatoms belonging to groups 13-16 of the Periodic Table of the Elements; every atom forming said ring being substituted with R^7 radicals wherein R^7 , equal to or different from each other, are hydrogen atoms or linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

L is $(R^8)_2$ wherein R^8 is a linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radical; and

- b) an alumoxane or a compound that forms an alkylmetallocene cation.
2. (original) The process according to claim 1 wherein the catalyst system further comprises an organo aluminum compound.
 3. (currently amended) The process according to claim 1, wherein in the compound of formula (I), ~~M is titanium, zirconium or hafnium; and X is a hydrogen atom, a halogen atom or an R group.~~
 4. (previously presented) The process according to claim 1 wherein R^1 is a C_1 - C_{20} -alkyl radical; R^2 , R^3 and R^6 are hydrogen atoms and R^7 is a hydrogen atom or a linear or branched, C_1 - C_{20} -alkyl radical.
 5. (previously presented) The process according to claim 1 wherein the compound of formula (I) has formula (IIa) or (IIb):



6. (previously presented) The process according to claim 1 wherein 1-butene is homopolymerized.
7. (currently amended) A metallocene compound of formula (IIb):



wherein

M is an atom of a transition metal selected from those belonging to group 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements;

p is 2, being equal to the formal oxidation state of the metal M minus 2;

L is $\text{Si}(\text{R}^8)_2$ wherein R^8 is a linear or branched, $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical;

R^1 , equal to or different from each other, are linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

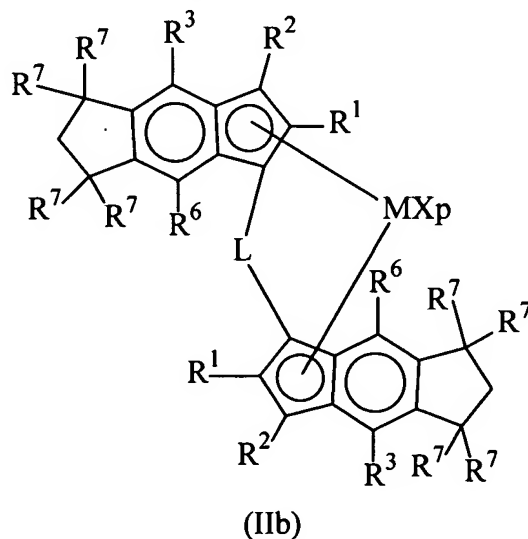
R^2 , R^3 and R^6 , equal to or different from each other, are hydrogen atoms or linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

R^7 , equal to or different from each other, are linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

X, equal to or different from each other, are hydrogen atoms, halogen atoms, R, OR, OSO_2CF_3 , OCOR, SR, NR_2 or PR_2 groups, wherein R is a linear or branched, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, C_7 - C_{20} alkylaryl or C_7 - C_{20} arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; ~~or a $OR'O$ group wherein R' is a divalent radical selected from C_1 - C_{20} -alkylidene, C_6 - C_{40} -arylidene, C_7 - C_{40} alkylarylidene or C_7 - C_{40} arylalkylidene radicals.~~

8. (cancelled)

9. (currently amended) A process for preparing a metallocene compound of formula (IIb):



wherein

M is an atom of a transition metal selected from those belonging to group 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements;

p is 2, being equal to the formal oxidation state of the metal M minus 2;

L is $\text{Si}(\text{R}^8)_2$ wherein R^8 is a linear or branched, $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl or $\text{C}_7\text{-C}_{20}$ -arylalkyl radical;

R^1 , equal to or different from each other, are linear or branched, $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl or $\text{C}_7\text{-C}_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

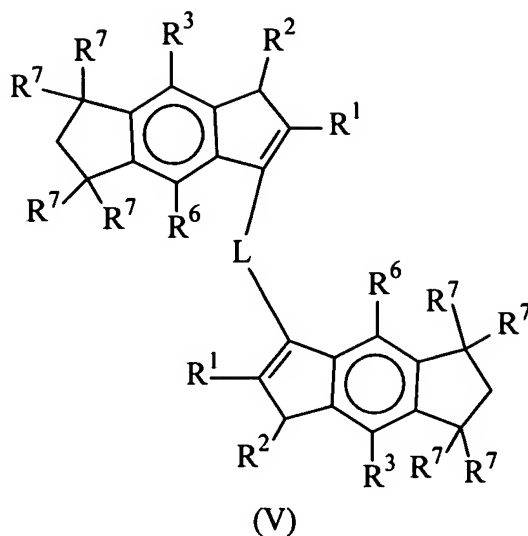
R^2 , R^3 and R^6 , equal to or different from each other, are hydrogen atoms or linear or branched, $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl or $\text{C}_7\text{-C}_{20}$ -arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

R^7 , equal to or different from each other, are linear or branched, $\text{C}_1\text{-C}_{20}$ -alkyl, $\text{C}_3\text{-C}_{20}$ -cycloalkyl, $\text{C}_6\text{-C}_{20}$ -aryl, $\text{C}_7\text{-C}_{20}$ -alkylaryl or $\text{C}_7\text{-C}_{20}$ -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements;

X, equal to or different from each other, are ~~hydrogen atoms~~, halogen atoms, ~~OR~~ , OSO_2CF_3 , or OCOR , ~~SR , NR_2 or PR_2~~ groups, wherein R is a linear or branched, $\text{C}_1\text{-C}_{20}$ alkyl, $\text{C}_3\text{-C}_{20}$ cycloalkyl, $\text{C}_6\text{-C}_{20}$ aryl, $\text{C}_7\text{-C}_{20}$ alkylaryl or $\text{C}_7\text{-C}_{20}$ arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; ~~or a OR^2O group wherein R^2 is a divalent radical selected from $\text{C}_1\text{-C}_{20}$ alkylidene, $\text{C}_6\text{-C}_{40}$ arylidene, $\text{C}_7\text{-C}_{40}$ alkylarylidene or $\text{C}_7\text{-C}_{40}$ arylalkylidene radicals;~~

comprising the following steps:

a) contacting a ligand of formula (V):



or its double bond isomer

with a base of formula T_jB or $TMgT^I$, or sodium or potassium hydride, or metallic sodium or potassium; wherein B is an ~~alkaline or alkali-earth metal~~ alkali or alkaline earth metal and j is 1 or 2, j being equal to 1 when B is an alkaline metal, and j being equal to 2 when B is an alkali-earth metal; T is selected from the group consisting of linear or branched, C_1 - C_{20} alkyl, C_3 - C_{20} cycloalkyl, C_6 - C_{20} aryl, C_7 - C_{20} alkylaryl or C_7 - C_{20} arylalkyl groups, optionally containing at least one Si or Ge atom; T^I is a halogen atom or a group OR'' wherein R'' is a linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements; wherein the molar ratio between said base and the ligand of the formula (V) and is at least 2:1; and

b) contacting the product obtained in step a) with a compound of formula MX_4 .

10. (cancelled)

11. (cancelled)

12. (previously presented) The process according to claim 5 wherein R^7 , equal to or different from each other, are linear or branched, C_1 - C_{20} -alkyl, C_3 - C_{20} -cycloalkyl, C_6 - C_{20} -aryl, C_7 - C_{20} -alkylaryl or C_7 - C_{20} -arylalkyl radicals, optionally containing at least one heteroatom belonging to groups 13-17 of the Periodic Table of the Elements.

13. (previously presented) The process according to claim 12 wherein formula I is formula IIa.

14. (previously presented) The process according to claim 12 wherein formula I is formula IIb.